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Outlining a Serious Moral Games in Bioethics

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Abstract

Our contribution discusses the possibilities and limits of using video games for apprehending and reflecting on the moral actions of their players. We briefly present the results of an extended study that introduces the conceptual idea of a Serious Moral Game (SMG). Then, we outline its possible application in the domain of bioethics for training medical professionals such that they can deal better with moral problems in medical practice. We briefly sketch major components of a SMG Bioethics. The contribution should demonstrate how such an instrument may improve psychological competences that are needed for dealing with various ethical questions within healthcare. The contribution is an intermediate step of a project that aims at actually creating a SMG for training in moral competences that are needed for putting bioethics in practice.

Keywords: Biomedical Ethics; ; Medicine; Moral Behaviour; Moral Psychology; Serious Moral Games; Training

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1. Introduction

The relationship between video games and morality is widely discussed in the public realm. But instead of following the common line of argument maintaining that the contents of video games rarely serve or even corrupt the understanding or promotion of moral actions, we consider the benefits these games might have to moral research and education. We have recently suggested that computer games may be a suitable medium for training in moral competences due to their ability to allow for immersion and the creation of an intrinsic player motivation [1; see also 2]. We call them “Serious Moral Games” (SMG), and we propose that they may serve as an extension of virtual reality-based training instruments in medicine. The fact that learning preferences of young adults are framed by novel media technologies [3] serves as an additional reason for advancing the use of a SMG in teaching biomedical ethics for young students.

We consider bioethics to be a promising domain for a SMG, wherein medical students and professionals would be the target audience. This, because it is undisputed that training in ethics is indispensable for medical students and professionals, but it frequently has been noticed that the effects of courses in biomedical ethics are limited – in

particular on medical students [4,5]. One reason for this may be that recognizing the relevance of ethical issues requires actual practice. But it may also be that the current training in ethics, which is based on deliberation about cases, is incomplete [6]. We suspect that one shortage is the insufficient inclusion of practicing psychological competences that underlie moral behaviour. This may for example explain why medical practitioners sometimes have difficulties in recognizing the alternative moral standpoints or values of patients and their close relatives [7]. As a failure to include diverging moral standpoints in medical decision-making can have severe effects and influences on the general acceptance of medicine, training the moral competences of medical professionals is of general importance for improving the healthcare system.

In the following, we give a very brief overview of our study and outline the main points that have to be discussed when creating a SMG in general: We first sketch the general relationship between video games and morality. Second, we present a psychological model of moral agency that serves as background theory for our endeavour. Third, we discuss game design consequences based on this theoretical framework. Fourth, we summarize findings of a larger study [1] that investigated current video games with respect to the role of moral decisions. Fifth, we briefly sketch how we intend to

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implement key design components of a SMG Bioethics. This contribution is part of a larger project that aims at creating a SMG for Bioethics and that includes both psychological research and game design.

2. Video Games and Morality

Up to recently, the general relationship between morality and video games was considered from a limited perspective. It was (and is) common to debate whether certain games (such as first-person shooters) have a negative impact on the moral development of adolescents [8], although the findings are controversial [9].

We will not comment on this debate here, but we remark that an increasing interest in creating “pro-social” video games has shown up in several ways. Some authors strongly maintain that video games – in contrast to other instruments of moral education like stories or films – are particularly well suited for such purposes in that such games do not merely convey content; rather, the rules on which the games are based allow the player to act (within the established framework of the game) [10], and thus interact, rather than simply absorb. This use of video games is accompanied by a noteworthy development in the game industry. There have been for some time games on the market in which the player has to develop explicitly moral qualities (e.g. cooperation) to succeed. The associated “socially conscious artificial intelligence” aspect of a game engine has become quite common in game design. Examples of such behaviours include taking responsibility or feeling empathy for game characters, and a game flow that responds to the behaviour of the players (e.g. assertive versus cautious) [11]. However, the possibility of moral decisions in such games is not usually discussed in terms of their possible realization in a video game, but in the context of cultural analysis [12].

Nevertheless, this discussion points to the possibility of creating a SMG: a game that enables one to determine the “morality” of players, and possibly have an effect on their behaviour outside of the game world as well. Naturally this goal raises methodical questions, whose answers form the prerequisites for such a project:

1. What does one mean by the idea of “morality”? In a general sense, “morality” describes the social norms and values that constitute the standard for “morally correct behaviour”. But: What sort of norm is “moral”? To what extent are such norms bound to cultural and historical frameworks? What modes of justification do moral norms require?
2. What model of moral agency should apply? If the “morality” of a player is to be understood or changed through a SMG, then there has to be a grasp of the psychological mechanisms on which morality depends. Otherwise it would be unclear which approaches would really address the player’s basic starting points.

3. Which game mechanisms are available to make determinations about the morality of the players? This relates to the possible content of the game, to the rules, and finally to the gameplay – that is, the structure that opens up the space of possibility, and therewith determines the progression of the game and, especially, the game experience.

We remind that the question, “how do you measure ‘morality’ with a game?” has to be answered first before one can create a “pro-social” video game, that is, a game that influences the morality of the players in one form or another. Otherwise, one would not have any kind of indicator for assessing the effect at all.

3. Moral Intelligence

If a SMG is to be able to measure the morality of the players, it must be embedded in a framework that has conceptual and empirical support. This can be accomplished through a certain model informed by an account of the psychological mechanisms of moral agency, and further refined through the theory of “Moral Intelligence” [13]. Roughly put, moral intelligence refers to the set of skills the moral agent needs in order to align her behaviour with the ends she has set for herself. It is thus a skill-based conception of morality or moral behaviour, analogous to the concept of “emotional intelligence” that describes the ability to deal with emotions. The approach describes the sequential logic of moral behaviour along with the associated underlying psychological processes, as well the way in which implicit and explicit knowledge of morality and its justifications are included. These elements underlie the five components of moral intelligence:

- *Moral compass*: This metaphor encompasses the set of moral schemata whose content is responsible for orienting the subject’s behaviour [14]. As such it is concerned with mental representations of both declarative and procedural knowledge, each of which is accessible to the subject in varying degrees.
- *Moral commitment*: The ability to activate or sustain a motivation for the inclusion of moral considerations in the process of perception, decision-making, and action. In contrast to the typical process logic of moral behaviour (perception → decision → motivation → action, [15]) moral commitment is a capacity that influences all stages of the process, and in particular provides a motivational force to the semantic content of the moral compass.
- *Moral sensibility*: The ability to recognize morally salient aspects of a particular situation. The relevance of moral sensibility is obvious: if such moral aspects of a situation are not recognized, there is no cause to be concerned with the question of right action.
- *Moral problem solving*: The ability to bring the morally salient features of a situation to the decision

making process, and depending on the degree of conflict involved (e.g., if the problem is a dilemma), to arrive at a decision consistent with the subject's particular moral compass.

- *Moral resoluteness*: The ability to carry out the decision that is made despite, inter alia, external resistance and barriers.

The concept of moral intelligence integrates the findings of (moral-) psychological research into a unified model. As such it enters an area with a rather long tradition. What distinguished our model from other approaches is the central role of moral commitment, the capacity to uphold the demands of morality throughout this entire process and to align one's cognitions, decisions, and actions with one's moral ends (Fig. 1). Moral commitment is to some extent the bridge between the moral compass and the other components of moral intelligence, and expresses the will to apply the contents of the moral compass.

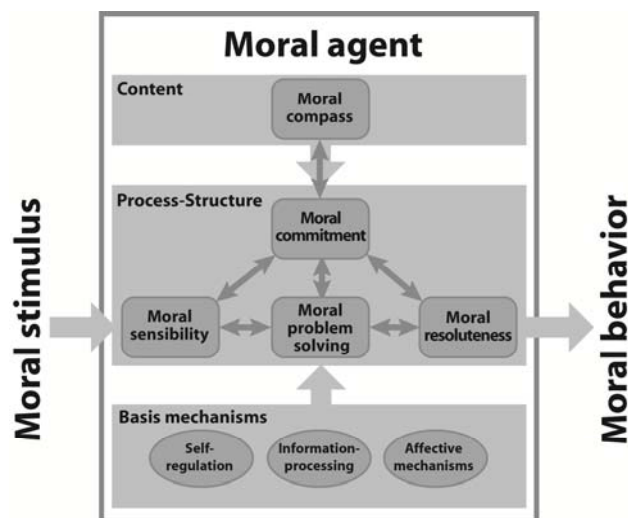


Figure 1. Outlining the components of Moral Intelligence. Moral commitment has a privileged role in the process structure and serves as “bridge” between content and psychological competences. In addition, basic psychological mechanisms will influence decision making (adapted from [13])

4. Implications for a Serious Moral Game

Any attempt to measure moral behaviour should reflect a central characteristic of human morality: humans are not only moral because they understand a valid moral system and act accordingly, but also because in certain situations they can put this moral system into question. It is not enough to analyse the extent to which a moral agent fulfils the demands of a moral system. One should also examine how the moral agent behaves when the applicability of moral norms becomes questionable in

certain situations. The justified rejection of certain norms (e.g. due to changed contexts) could be a mark of moral agency, so that the way one handles these substantive commitments can be an object of empirical interest. This is of particular relevance in bioethics, as many moral problems in medicine have a dilemmatic structure where conflicting values cannot be realized in the same time. For example in psychiatry, some interventions may be needed to avoid harm to the patient, but may violate the patient's autonomy. Because of that basic problem, not all components of the psychological model of a moral agent can be addressed in a similar way in a SMG:

- *Moral compass*: In order to give an account of how the behaviour of the player in a game relates to her moral convictions, these convictions must be articulated in at least a rudimentary way. This may, but need not necessarily, happen through the game itself, but can happen, for example, as part of the debriefing, if the game is part of a study.
- *Moral commitment*: Moral action is closely linked with the motivation to allow one's behaviour to be guided by moral considerations. For a SMG this means that the gameplay has to build in such a motivation, which is to say that moral issues must have significance to the game itself.
- *Moral sensibility*: Moral action needs the ability to recognize that there is a moral problem presented in a given situation. Accordingly, a SMG has to present the moral questions in a manner that inherently allows for a corresponding moral cognition. The extent to which the individual player can effectively make use of his or her moral sensibility is one of the possible items for measurement.
- *Moral problem solving*: Although the morality of human beings is not reduced to “solving” moral issues, dealing with difficult choices is still central. Since most games are basically structured decision spaces, this point is a ‘natural’ component of a SMG. But video games could enable the implementation of various decision-making situations (e.g. those under time pressure, with limited information, etc.) within a common framework.
- *Moral resoluteness*: Moral agency is manifested in the concrete behaviours or behaviour patterns of a moral agent. Since video games often utilize representations of the player, this point can be included fairly easily by including obstacles and “temptations” in the game play that must be confronted by the player.

When trying to implement such elements in a SMG one has to distinguish two levels at which to evaluate ethical action. Games always provide opportunities for ethical behaviour external to the gameplay itself, but these are not relevant when it comes to determining the components of a SMG. Accordingly, we will hereafter focus on ethical actions within the game. Here, two evaluation levels have to be distinguished, the first of

which will be illustrated using the example of the game Pong (Atari, 1972). Here, a player may, on the basis of ethical considerations, purposefully lose, or moderate his play according to the lesser abilities of his opponent. Such ethically motivated actions happen within the game, and are therefore part of the gameplay (in contrast to, say, violating the rules, which is not part of the game logic). The ethical significance of this behaviour, however, lies outside of the game, in that the effects of the action obtain in the real world rather than that of the game itself. The player brings an ethical quality to his game actions by placing the game actions in a context outside of the game itself. This social context enables the player to evaluate his own actions according to ethical criteria (e.g., under the aspect of fair play).

However, the social context in which the game takes place is not the only level on which game behaviour can be ethically judged, a player can invoke ethical standards for his actions, or wherein such standards can be deduced. Another is that of the game world itself, and refers to the ethical evaluation of the impact that players' actions have on the course of the game, given the way the designers have set things up. Given the complexity involved in establishing and sustaining a social context in which decisions with ethical dimensions can be made in a way that they can be measured, an evaluation that focuses on the social context seems rather unsuitable for the implementation of a SMG. The alternative therefore is to direct our attention to games that don't require such conditions, since the possibilities for ethical decisions are internal to the games themselves.

5. Potential Control Parameters of a SMG

In an extensive study that is beyond this contribution, we have analysed several paradigmatic examples of current computer games with respect to their narrative setting, their game play and their ethical system [1]. In this way we identified a wide range of variables that have already been used in games and that represent potentially relevant parameters for measuring moral behaviour:

- *Deliberation time*: How much time does the player have to make his decision? How does the time pressure affect the decision making process?
- *Possibilities for correction*: Does the player have the possibility to correct decisions and actions retrospectively, as in the form of rectifications, say? To what extent does this possibility effect the decision making process, especially when the player expects it?
- *Narrative variability*: Based on variations within the narration, priming effects could be examined. Variables include narrative elements such as backstory or cut scenes.
- *Different contexts of action*: The narrative setting as a whole as well as the genre of the story can be a design variable, given the appropriate effort.

Different contexts can have importance for an ethical decision.

- *Different character roles*: The role of the player can be designed as a variable, as can the character's backstory, its looks, and its modes of interaction. To what extent do the features of the character determine the decision making process?
- *Interaction with NPCs*: Due to the audio-visual mode of presentation, subtle changes in the character's social environment can be built in. These variables would concern interactions with the NPCs, such as how they talk to the character.
- *Evocative level*: Based on variations in the audio-visual development of the characters, one could observe the effects of different features like age, gender, looks, etc., on the decision making process.
- *Different forms of presentation and audio-visual style*: Such elements enable the examination of framing effects. How do the form of presentation, the style, or the media processing effect the decision making process? Do realistic forms of presentation support ethical decisions more than abstract and stylized forms? How can the relationship between image and text be evaluated as a basis for ethical behaviour?
- *Different perspectives*: How might the distance that the player has from events, persons, or situations, especially ones she can influence, play a role in moral agency?

Each of these parameters can be used for determining the structure of the controls or as measurement parameters. The individual objectives of a SMG have to determine how these factors are to be instantiated.



Figure 2. Screenshot of Fable 2. The dynamic character development has a central significance for the ethical game system. In addition to age, diet, and physical activity, moral behaviour also affect the look and appearance of the character (adapted from [1])

For example, the game “Fable 2” (Microsoft, 2008; see Fig. 2) uses a moral system that is built on the dichotomies of “good and evil” and “pure and corrupt”,

and evaluates many game actions on this basis. The system is directly tied to character development, such that actions that are evaluated from an ethical perspective as “good” or “pure” lead to a different appearance of the character than “evil” or “corrupt” actions.

In our project, we aim for a more complex moral ontology. In the current stage, we evaluate various moral dilemmas in healthcare, considering the extent to which players are able to recognize the values involved, and which of them guide their decisions. In this way, a “moral profile” of the player should emerge during the game that informs him or her of preferences with respect to moral values inherent in medical decision-making.

A fundamental problem for the development of a SMG lies in the fact that the player is allowed a fictional freedom that encourages her to test out new roles with the assurance that her actions have no consequences in the real world. This is ultimately a characteristic of a game that to a certain extent defines a protected, experimental space where actions can be taken without having consequences for the world outside. The plausibility of this point can be disputed, however, if one thinks, for example, of multi-player games, where players have to cooperate and a game decision may well have real-world effects (on the reputation of the player, for instance).

It is also possible to define a global control parameter that directly concerns a “morally relevant” aspect of the game. One could, say, introduce a “fairness parameter” that defines the behaviour of the other NPCs toward the player’s avatar – as generally fair or unfair, perhaps. Accordingly one could examine how the player’s behaviour changes depending on the “fairness attitude” that is chosen. In this way, data is obtained whose validity can be tested using standard psychological approaches (e.g., by comparing with established measures).

One problem with common psychological tests for moral behaviour is that environmental effects (interaction with the project leader, framing through situational effects, etc.) are often very difficult to control. A SMG could help standardize testing situations in that, as a program, the game could run the same for all subjects and thus ensure a largely consistent framing. The degree of standardization, however, will depend on the type of game. For example, a linear storyline would allow for high standardization. It would ensure that the events of a game happen in order, and would exclude randomly generated elements and dynamic game processes. But aside from simplifying the standardization, linearity in game structure contributes relatively little to the value of a SMG. The potential of such a game lies especially in dynamic game sequences, since those do not present ethical decisions as isolated events, but have contextual consequences and so provide relevant meanings to the game and the actions. In implementing a SMG, it thus has to be decided whether dynamic game sequences, which admittedly highlight social game aspects but cannot guarantee a consistent framing, have to be traded off in favour of standardization.

6. Design Components of a SMG Bioethics

We are currently in the process to create the Technical Requirement Specification (TRS) of a SMG Bioethics that should provide the user with information on his or her important values that play a role in medicine, as well as on the psychological skills the person has in order to pursue those values in their professional life. The TRS consists in defining the following components:

- *World design*: Development of a general storyline in which the tasks the players have to solve are embedded.
- *System design*: Defining the rules of the game and their formal embedding (e.g., quantifying, how specific behaviours will translate into the visualised “moral profile”).
- *Content design*: Creating of play figures, their characters, their environment and their tasks.
- *Game writing*: Writing all textual elements (dialogues, “meta text” for describing tasks) that play a role in the game.
- *Visual design*: Creating the visual appearance of the scenarios and the avatars, non-playable characters.
- *User interface design*: Defining how the player can interact with his avatar and the other game characters.

These are standard components of a TRS. In its first version, we do not plan to include levels and audio elements in the SMG Bioethics, i.e., we omit audio and level design.

We can summarize the current state of the TRS as follows: Our “world” is a medium-sized hospital in an urban setting. The player will control an avatar representing an assistant physician, who will resident for training purposes on several clinical centres. We plan to implement the SMG Bioethics on a tablet computer, such that the avatar is controlled using sliding and tipping movements (analogous to smartphones). The player will be confronted with various, everyday tasks; some of them are dilemmatic, others not. Some tasks will be imposed on the player, others he or she can choose to fulfil or not. Tasks will extend on a relatively short amount of time and it is required to solve them within this time period. Searching tasks is not time critical, i.e. a player will be able to interrupt the game after having solved a task. Solving each task will (depending on the decision) generate several types of “points” (experience, respect by co-workers, popularity by patients, appreciation by seniors) and the amount of points will have effects on the visual appearance of the avatar and the interactions of the NPCs with the avatar. A major challenge within the game will be that the “official goals” (what is expected from the resident; which defines which points are more important than others) will change in an unpredictable way (e.g. due to cost restrictions) – and the player will have to decide whether he or she will adapt player behaviour to those

changes or not. All interactions will be on a textual basis (dialogues and meta-information describing a task). The visual appearance of the game does not intend to be realistic, but should follow a comic-like design. The game ends after a certain amount of tasks has been solved.

Beside this “game surface”, where all player actions will take place, there is also a “hidden layer”, which measures and visualizes the five moral intelligence components of the player based on the behaviour in the game. During the game, the player will be able to access this “hidden layer” at defined time points and if certain other conditions are fulfilled – i.e. this can be understood as an additional motivational factor in the game. The “hidden layer” should – in a humorous, not too serious way – tell the player, which values he or she honoured in the game (moral compass) and how well they did with respect to the other moral intelligence components. This information can also be discussed in the actual course in which the SMG will be embedded.

In the current phase of the project we are creating a prototypical scene of the game in order to determine in detail the visual design and the user interface design and to pre-test their usability with medical students. The work also involves master students (Master of Arts in Design program) of the Zurich University of the Arts. The technical requirement specifications as well as a first prototypical scene are expected to be finalized by autumn 2014. The project is supported by a grant of the Swiss Academy of Medical Sciences.

7. Conclusion

In a culture in which the digital gathering of information about social processes plays an increasingly important role, it is plausible to suppose that the interactive medium of the video game will gain general acceptance as an instrument for the acquisition of knowledge. A SMG that contains the elements articulated here and that is applied in contexts where the need for ethical training is undisputed, as in medicine, can open up opportunities for the medium beyond those of today’s common design formats, thereby providing substantial support to moral research as well.

The complexity of this topic presents new kinds of challenges for the construction of such games. The interdependence of multiple parameters, along with the difficulties of correlation and interpretation, leave designers with many hard questions. Serious Moral Games would certainly break new ground in terms of layout, structure, and interest. Nevertheless, through SMGs, awareness could develop as to how moral behaviour can be better understood and applied at the level of the individual, and also concerning its significance and value within the social context.

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